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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/802,388	HERNANDEZ ET AL.	
	Examiner	Art Unit	
	GEORGE C. MONIKANG	2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 March 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-38* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-38* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, filed 3/6/2009, with respect to the rejection(s) of claim(s) 1, 18, 26-27 & 31 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Enzmann et al, US Patent 5844996, Goldsmith et al, US Patent 6436057 B1 and Eriksson, US Patent 4677676.

2. Applicant's arguments filed 3/6/2009 with respect to the rejection of claims 24-25 have been fully considered but they are not persuasive.

3. With respect to applicant's arguments on claims 24-25, the examiner maintains his stand. In claims 24-25, applicant argues that the Enzmann et al reference fails to disclose halting detection of the modified sound before determining the noise cancellation signal. Examiner argues that Enzmann et al discloses noise cancellation occurring only after the modeling circuit uses the input of the error microphone (which picks up signals of the sounds outputting from the speakers) to determine the appropriate filter transfer function; therefore the error microphones detect nothing while the noise cancellation occurs and only detect when in modeling mode before noise cancellation mode and also at this point, there is no additional input from the error microphones (*col. 6, lines 4-8; col. 6, line 66 through col. 7, line 4: discloses noise cancellation occurring only after the modeling circuit uses the input of the error microphone (which picks up signals of the sounds outputting from the speakers) to determine the appropriate*

filter transfer function; therefore the error microphones detect nothing while the noise cancellation occurs and only detect when in modeling mode before noise cancellation mode).

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-2, 4-6, 8-13, 15, 18-22, 24-25 & 37 are rejected under 35 U.S.C. 102(b) as being anticipated by Enzmann et al, US Patent 5844996. (The Enzmann et al reference is cited in IDS filed 3/18/2005)

Re Claim 1, Enzmann et al discloses a system for sound cancellation comprising: a source microphone for detecting sound propagating from a sound source (*fig. 1: 36; col. 4, lines 11-28*); a speaker configured to direct a canceling sound toward a cancellation location that is spatially remote from the sound source (*fig. 1: 18 & 46; col. 4, lines 40-53*); a computational module in communication with the microphone and the speaker (*col. 3, lines 27-42: processing means receives signal from microphone and generates a noise cancelling signal that is outputted via loudspeakers*), the computational module configured to receive a signal from the microphone (*col. 3, lines 27-42: processing means receives signal from microphone and generates a noise*

cancelling signal that is outputted via loudspeakers), identify a cancellation signal using a predetermined adaptive filtering function responsive to an acoustic environment of the cancellation location (*col. 2, lines 36-39*), and transmit a cancellation signal to the speaker (*col. 2, lines 36-39; col. 3, lines 27-42: an adaptive filter is used to generate the noise cancelling signal that is outputted via loudspeakers*).

Re Claim 2, Enzmann et al discloses the system of claim 1, further comprising a training sub-system having at least one training microphone that can be placed at the cancellation location (*col. 4, lines 33-39*).

Re Claim 4, Enzmann et al discloses the system of claim 2, wherein the predetermined adaptive filtering function is determined by receiving a first sound input from the source microphone (*fig. 1: 36; col. 4, lines 11-28*), receiving a second sound input from the training microphone (*col. 4, lines 33-39*), and then determining the adaptive filtering function (*col. 2, lines 40-43: error signal generated by the noise cancelling signal is picked up by the error microphone 41; since the noise cancelling signal comprises microphone 36 picking up noise signals and generating cancelling signals, the adaptive filter compensates for sound between micmicrophone6 and 41*), wherein the predetermined adaptive filtering function is adaptive to a sound transformation between the source microphone signal and the training microphone signal (*col. 2, lines 40-43: error signal generated by the noise cancelling signal is picked up by the error microphone 41; since the noise cancelling signal comprises microphone 36*

picking up noise signals and generating cancelling signals, the adaptive filter compensates for sound between micmicrophone6 and 41).

Re Claim 5, Enzmann et al discloses the system of claim 1, wherein the predetermined adaptive filtering function comprises a function that identifies a sound transformation between the source microphone and the cancellation location without contemporaneous sound input at the cancellation location (*col. 7, lines 23-42: error feedback microphone picks up sound signals after the adaptive filter has processed the input noise signals and the speakers are generating noise cancellation signals at which point, the error microphone picks up sound errors for feedback; Therefore the microphone at the cancellation location does not pick up sound contemporary with the adaptive filter function*).

Re Claim 6, Enzmann et al discloses the system of claim 4, wherein the cancellation location is spatially removed from the source microphone and speaker (*fig. 1: 18 & 46; col. 4, lines 40-53*).

Re Claim 8, Enzmann et al discloses the system of claim 1, further comprising at least one locating sensor (*col. 4, lines 11-28: directional microphone 36 can sense locations change of snorer*).

Re Claim 9, Enzmann et al discloses the system of claim 8, wherein the locating sensor is configured to determine a location of a subject (*col. 4, lines 11-28: directional microphone 36 can sense locations change of snorer*).

Re Claim 10, Enzmann et al disclose the system of claim 9, wherein the predetermined adaptive filtering function determines an approximate sound

transformation as a function of the location of the subject (*col. 4, lines 11-28: directional microphone 36 can sense locations change of snorer*).

Re Claim 11, Enzmann et al disclose the system of claim 8, wherein the locating sensor is configured to determine a location of a sound source (*col. 4, lines 11-28: directional microphone 36 can sense locations change of snorer*).

Re Claim 12, Enzmann et al disclose the system of claim 11, wherein the adaptive filtering function determines an approximate sound transformation at a cancellation location based on the location of the sound source (*col. 4, lines 11-28: directional microphone 36 can sense locations change of snorer*).

Re Claim 13, Enzmann et al disclose the system of claim 8, further comprising at least one locating sensor configured to determine a location of a sound source (*col. 4, lines 11-28: directional microphone 36 can sense locations change of snorer*), wherein the adaptive filtering function comprises a function that determines an approximate sound transformation at the location of the subject based on the location of the sound source (*col. 4, lines 11-28: directional microphone 36 can sense locations change of snorer*).

Re Claim 15, Enzmann et al disclose the system of claim 1, wherein the speaker comprises a plurality of speakers (*fig. 1: 46*).

Claim 18 has been analyzed and rejected according to claim 1.

Claims 19-22 have been analyzed and rejected according to claim 4.

Re Claim 24, Enzmann et al discloses a method for canceling sound, comprising: detecting first sound at a first location (*abstract*); detecting a modified second sound at a second location, the modified second sound being a result of

sound propagating to the second location (*abstract*); determining an adaptive filtering function (*col. 2, lines 40-43*), approximating the second modified sound from the first sound (*abstract*); halting detecting of the modified sound (*col. 6, lines 4-8; col. 6, line 66 through col. 7, line 4: discloses noise cancellation occurring only after the modeling circuit uses the input of the error microphone (which picks up signals of the sounds outputting from the speakers) to determine the appropriate filter transfer function; therefore the error microphones detect nothing while the noise cancellation occurs and only detect when in modeling mode before noise cancellation mode*); and determining a cancellation signal proximate the second location from the first sound (*abstract*) and the adaptive filtering function (*col. 2, lines 40-43*).

Claim 25 has been analyzed and rejected according to claims 1 & 5.

Re Claim 37, Enzmann et al discloses the system of claim 1, wherein the sound source comprises a snoring individual and the speaker is nor wearable by the snoring individual (*fig. 1: 46*).

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an

> application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claim 26 is rejected under 35 U.S.C. 102(e) as being anticipated by Goldsmith et al, US Patent 6436057 B1.

Re Claim 26, Goldsmith et al discloses a method for analyzing sound for health conditions (*col. 4, lines 28-36*), comprising: providing a microphone spatially remote from a subject (*col. 4, lines 28-36*); analyzing a sound input to the microphone to determine if a change in respiratory sounds occurs sufficient to identify a health condition comprising abnormal breathing (*col. 4, lines 28-36: cough causes abnormal breathing*).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

1. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Enzmann et al, US Patent 5,844,996 as applied to claim 1 above, in view of Parkins, US Patent 6,665,410 B1.

Re Claim 3, Enzmann et al disclose the system of claim 1, but fails to disclose further comprising a temperature sensor in communication with the computational module, wherein the predetermined adaptive filtering function is responsive to the temperature of the acoustic environment as taught in Parkins (*Parkins, col. 4, lines 35-49*). It would have been obvious to incorporate the temperature sensor of Perkins (*Parkins, col. 4, lines 35-49*) into the system of Enzmann et al for the purpose of compensating for the change in temperature & humidity in a given space.

2. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Enzmann et al, US Patent 5,844,996 as applied to claim 1 above, in view of Raviv's admitted prior art (*hereinafter referred to as RAAPA; col. 2, lines 4-14*). (The Raviv et al admitted prior art reference is cited in IDS filed 3/18/2005)

Re Claim 7, Enzmann et al discloses the system in claim 1, but fails to disclose wherein the source microphone comprises a plurality of source microphones as taught in RAAPA (*RAAPA, col. 2, lines 4-14*). It would have been obvious to use the multiple microphones of RAAPA (*RAAPA, col. 2, lines 4-14*) with the system Enzmann et al for the purpose of the sound source signal better facilitates cancellation.

7. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Enzmann et al, US Patent 5844996, as applied to claim 1 above, in view of Goldsmith et al, US Patent 6436057 B1.

Re Claim 16, Enzmann et al disclose the system of claim 1, but fails to disclose wherein the computational module further comprises a screening module that can analyze signals from the source microphone for indications of a health condition comprising abnormal breathing. However, Goldsmith discloses a microphone located remotely from a user that is capable of picking up health conditions such as cough fro analysis (*Goldsmith, col. 4, lines 28-36: cough causes abnormal breathing*). It would have been obvious to utilize the microphone as taught in Goldsmith as the source microphones in Enzmann et al for the purpose of obtaining a multifunctional system.

Claims 17 & 23 have been analyzed and rejected according to claim 16.

8. Claims 14, 27-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Enzmann et al, US Patent 5844996, in view of Eriksson, US Patent 4677676.

Re Claim 27, Enzmann et al discloses a system for sound cancellation comprising: a source microphone for detecting sound (*abstract*); a speaker (*abstract*) configured to transmit a canceling sound configured to cancel the detected sound such that the canceling sound is localized with respect to a cancellation location (*fig. 1: 18 & 46; col. 4, lines 40-53*). Even though, Enzmann et al fails to disclose the speaker being a parametric speaker, Eriksson discloses

a unidirectional speaker array that outputs noise cancelling sounds (*Eriksson, col. 5, lines 17-26: unidirectional speaker has a parametric speaker*). Thus, it would have been obvious to use a directional/parametric speaker as taught in Eriksson in Enzmann et al for the purpose of directing the noise cancellation signal to the non snorer.

Re Claim 30, Enzmann et al discloses the system of claim 27, further comprising: a computational module in communication with the microphone and the speaker (*Enzmann et al, fig. 1: 18 & 46; col. 4, lines 40-53*), the computational module configured to receive a signal from the microphone (*Enzmann et al, fig. 1: 18 & 46; col. 4, lines 40-53*), identify a cancellation signal using a predetermined adaptive filtering function responsive to an acoustic environment of the cancellation location (*Enzmann et al, col. 2, lines 40-43*); and transmit a cancellation signal for producing the canceling sound to the speaker (*Enzmann et al, fig. 1: 18 & 46; col. 4, lines 40-53*).

Claim 31 has been analyzed and rejected according to claim 27.

Re Claim 36, Enzmann et al discloses the system of claim 31, further comprising at least one locating sensor configured to determine a location of a sound source (*Enzmann et al, fig. 1: 26; col. 3, line 61 through col. 4, line 10*), wherein the adaptive filtering function comprises a function that determines an approximate sound transformation at the location of the subject based on the location of the detected sound (*Enzmann et al, fig. 1: 26; col. 3, line 61 through col. 4, line 10*).

Claims 14, 28-29 & 32-35 have been analyzed and rejected according to claims 27 & 31.

9. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Enzmann et al, US Patent 5844996, as applied to claim 1 above, in view of official notice.

Re Claim 38, which further recites, "Wherein the predetermined adapted filtering function includes a situational transfer matrix function, W, **W = 1/(d-e'e)** wherein e is a transfer function for sound propagation from the sound source to the source microphone, e is a transfer function for sound propagation from the speaker to the cancellation location, and d is a transfer function for sound propagation from the source microphone to the speaker, and the * operator denotes mathematical convolution." Raviv and Enzmann et al do not disclose the transfer matrix function, W, **W = 1/(d-e'e)** as claimed. Official notice is taken that both the concepts and advantages of using various transfer matrix functions to perform adaptive filtering are well known in the art. Thus it would have been obvious to use the transfer matrix function, W, **W = 1/(d-e'e)** so the system could self-adjust itself according to optimizing algorithms.

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GEORGE C. MONIKANG whose telephone

number is (571)270-1190. The examiner can normally be reached on M-F. alt Fri. Off 7:30am-5:00pm (est).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chin Vivian can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/George C Monikang/ 6/2/2009
Examiner, Art Unit 2614

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